

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Schumm, James W.
Bacher, Jeffery W.

(ii) TITLE OF INVENTION: MATERIALS AND METHODS FOR

IDENTIFYING AND ANALYZING INTERMEDIATE TANDEM
REPEAT DNA MARKERS

(iii) NUMBER OF SEQUENCES: 147

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Promega Corporation
(B) STREET: 2800 Woods Hollow Road
(C) CITY: Madison
(D) STATE: Wisconsin
(E) COUNTRY: U.S.A.
(F) ZIP: 53711-5399

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette - 3.5 inch, 1.44 Mb
(B) COMPUTER: IBM compatible PC
(C) OPERATING SYSTEM: Windows NT 4.0
(D) SOFTWARE: WordPerfect 7.0 (DOS text format)

(viii) ATTORNEY/AGENT INFORMATION:

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(2) INFORMATION FOR SEQ ID NO:1

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 445 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(vii) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: C074

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 1

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GATCCTTTGC ACCCAGANAG AAGTAATTAT TTCAACACAG TTGGAACAGT 50

TAAAAAGATT TAAAATTTTC AAAAAAACAA TCATTTTCTC TTTTCTTTCT 100
GGCTCAGACA CCTCATTGCT TTCTGACTGA CCAAGGCGCA GCGCANTTTG 150
CAGCAGCCAT GGGGGTTCCA GAGATTCTTG GANAAAAACT GGTGACAGAN 200
AGAAACAAAA AGCGCCTGGA AAAAGATAAG CATGAAAAAG GTGCTCAGAA 250
AACAGATTGT CAAAAGTAAG TCTTACCTGT GGCTCGCATT ATTTGGGAGT 300
TATTAAAATA TGAAAGTTTG GCAAATACCC GGTATCTAC AGTCCTTTNG 350
TTTNGTTTTG GTTTTGTTTA GTTTGGTTTT GTTTNGTTTN GTTTGACACG 400
GAATCTCTCT CTGTTGCCCA AACTGGGAAT ACAGTGGTGC CGATC 445

(2) INFORMATION FOR SEQ ID NO:2

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 411bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: C221

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 9p

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GATCACTTGC CATCCCTGCC ACACAGTTTC CTCCTCTGGA AACTGGGGGT 50
GATGACCCCT GCCCTACCCA CTTGTTCATGG CATTGGGGAC ATGAACACAC 100
TTTGCACCTG TCAGGCAAGG CTTAAACAGG GATATGCACT GGTAATAGAA 150
AAGAGGGACT AAGTTTTGTT TTGTTTTGTT TTGTTTTGTT TTGTTTTGTT 200
TTGTTTTGTT TTGTTTTGTT TTGTTTTTCT GAAGAAGTCC CTAGAAGCGC 250
TCAGTGTTGG AATGCTCTCT TGTAGCAGTG GCGGCTGCTG CTGGTTCCGG 300
GTCAGATGCC GGAATTGGGG GTGCGCTTGG GTGCAGCTGC ATTCATCTG 350
GTCCTGGGCC TCGGTCCTGG CTTGGAGAGG TGCAGCTCAC AGCCACTTCA 400
TGGCTGGGAT C 411

(2) INFORMATION FOR SEQ ID NO:3

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 354bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: C240

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GATCANCATG GGTTCATCT GCCTGGCCCT TCACCCCTA CTCAGGGCAG 50
CTCTGAATTG TCTNCCCCGC TTCAAAGTTC CCAGTTCAAC TTCTCCCTCT 100

GCCCAATCCT GTTTCCTTCT CTTCCACAGG TATTAATTTG GCCAGNTGCA 150
 GTGGCTCATG CCTGTAATCT CAACTTTGGG AGGCCAAGGT GGGAGGATTG 200
 CTTGANCCCA GAATTTTGAA ACCANCCTCT GAAACATANT GANACCCCTG 250
 TCTCAAAACA AAACAAAACA AAACAAAACA AAACAAAAC TANCCAGGCA 300
 TGATGGTGTG TGCCTGTGGT CCCANCTATT CAGGAGGCTG AAATGGGAGG 350
 ATC 353

(2) INFORMATION FOR SEQ ID NO:4

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 317 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: C331

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

GACCGTGGAA NCCAAAAGTC TGCCTACCGC ATCTTAGTCC AGAGTTCCTG 50
 TTTTACTTTC TTTTGAAGG TCTGTGGATT CTTTATTTTC ATGGCACCTT 100
 AGCAATACAT TTTAAAAGCT TGTTTTATTT TATTCAGCAT TTTGGTTATT 150
 TCCATTGGAA NANTCATTCA GGGCGTTTAG TCTGCCACAG TGCTGGAAAC 200
 TAAAGCTAGG ATTACATGTT TTGTTTTGTT TTGTTTTGTT TTGTTTTGTT 250
 TTGTTTTGTT TTGTTTTGTG ACAGGGTCTT GCTCTATTGC CTTAGGCTGG 300
 GGTGCAGTGT TGTGATC 317

(2) INFORMATION FOR SEQ ID NO:5

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 387 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: C362

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 4

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GATCTGGAGT GGAGAGCATT CCAGGCAGAA TGAAGAGCCA GGACCAAGAC 50
 CACNAGGTGG AAACAGACTA ACAGAAAGAA AGCCANACCA CGAGGCAGAA 100
 ACAGACTAAC AGAAAGAANA TCAGGTCGAC TTGCCTAAAA AGAGTGAGCT 150
 AGGGAAAAGC ATGGCGGAAG AAACAANGTT GCTGAAAGCA ACTCTTATTT 200
 TCTTGGCTTA GAAACCANNA AAATGCNTTT GGGTTTTATC TTAGCATAAT 250
 GAAAGACAT GTNANACTTC TGAACACGAA ATCTGACATG TTTTACAGAC 300

NTGTTTTACA TGGTTTTGTT TTGTTTNGTT TTGTTTTGGG ATGGAGTCTC 350
GCTCTGTTGC CANGCTGGGA GTGCAATGGT TGCGATC 387

(2) INFORMATION FOR SEQ ID NO:6

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 471bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: C390

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

GATCACGAGG TCAGGAGATG GAGACCATCC TGGCTAACAT GGTGAAACCC 50
CGTCTCTACT AAAAATACCA AAAAATTAGC CGGGCATGGT GGCGGGCGCC 100
TGTAAGTCCCA GCTACTCAGG AGGCTGAGGC AGGAGAATGG CGTGAACCCG 150
GGAGGCGGAG CTTGCAGTGA GCCGAGATTG CGCCACTGCG CTCCAGCCTG 200
GGTGACAGCG AGAATCTGTC TCAAAACATA ACAAACAAA ACAAACAAA 250
ACAAACAAA ACAAACAAA TTTGGAATTA TGTAGGCAAA GTGGGAGAAA 300
GAGANGGACG AGGACTNAGG TAAAGATAAT ATGCAAAATA GAAAGAGCAN 350
GAAGGGGCAT GGATATGTGT AAATTCAAAG AAAGGCAAAG TGGCTGGTGC 400
ACAAAGAGTG AGGAGAGCAA NGNGTGAAAA TGACTTTAGT GAGACAAGGC 450
AAGGGACAAA TCATGAAAAA T 471

(2) INFORMATION FOR SEQ ID NO:7

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 367 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: G022

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 2p

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GATCGCACCA CTGCACTCCA GCCTTGGTGA CAGAGCAAAA CTCNTTCTCC 50
AAAGAAAAGA AAAGAAAAGA AAAGAAAAGA AAAGAAAAAA AAAATCCATG 100
GTGAAAGTGA CGACAGTNGA GTAGGGGATG AGCTCAAAGC AAATGCATGC 150
ATGTNCCCCA CCCTCAACAC AAACACACAC ACACACACAC ACACACACAC 200
ACACACACAC ACACATACTT CTTTAGAGAT ATTTAGGTGT ATATATGCTA 250
ACTTAGGAAA CTTTAGAAAA CCTTGTTATG ATATTATTAG TCAAAAAATA 300
TTTAAGCCAC AGTTTCGCAA TTTTAAGATT GTACTACTGG TATCTGGAGT 350

ATCTGAATCT CTGGATC

367

(2) INFORMATION FOR SEQ ID NO:8

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 295 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: G023

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 16q

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

GATCACAGCA	CTGCACTGCA	GCCTGGGCAA	GAGAGCAAGA	CCCTCTCTCT	50
CAGGGAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	100
AAGAAAAGAA	AGGAAGGAAA	GAGAGAGGAA	GGAAGGAAGG	AAGGTAAGAA	150
GGAAGGAAGG	AAAGAAAGAA	GGAAGGAAGG	TAGGGTGGTT	TTGGGATGTG	200
AAATGCTGTC	AGTCAACAAA	GAGCTATGAC	CACAGGTGTC	ACTGAGTAGC	250
AGGGGCAGCC	CATCCTGCTC	CCTAGCTGCA	CTCACCTGA	AGATC	295

(2) INFORMATION FOR SEQ ID NO:9

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 361 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
- (B) CLONE: G025

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 1

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GATCTGATGG	TTTCATAAGT	GTCTGGCATT	TCCCCTGCTT	GTACTTCTCT	50
CCCCGGCTAC	CGTGTGAAAA	AGGTCCTTGC	TTCCCCTTTG	CCTTCCACCA	100
TGATTGTGAG	CTTCCTGAGG	CCTCCACAGA	CATGTGGAAC	TGTGAGTCAA	150
TTAAACTTCT	TTCCTTTATA	AATTACCCAG	TCTCAGGAAG	TTCTTTGTAG	200
CAGTGTGAGA	ATGGAGGAAG	AAAGAAAAAG	AAAAAAAAGG	AAAAGAAAAG	250
AAAAGAAAAG	AAAAGAAAAG	AAAGGAAGA	AAGAAAGAAAG	AAAGAAAAGAA	300
AGAAAGAAAAG	AAAGAAAAGAA	AGAAAGAAAAG	AAAGAGAGAG	AAGTGGTTAG	350
CAAATGTGAT	C				361

(2) INFORMATION FOR SEQ ID NO:10

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 318 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G047

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 2p

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GATCACTTGA GGCCAGGGGT TCGAGGCCAG CCTGGGCAAC ATATCAAGAC 50
CCCCATCTCT ACATAAAAAG AAGAAGAAAC GAAAAGAAAA GAAAAGAAAA 100
GAAAAGAAAA GAAAAGAAAA GAAAAGAGTG GAAGAGTGCA GGAGCCGAGA 150
GGGAGAGAAA ATGTAGTGGT GAGGGGCAGC TTCTGGAAAG GCCCATACTA 200
CAGAGGGAGG AATCCTAATT CCTCACTATC TCTCTAACAT CAGGTAAGCA 250
TCTCATGATG CAGTTAGAAA GCACATTTCC TTCTTCAGTT TCCCCTCTGG 300
CTGTGTTGAC CCAGCCCA 318

(2) INFORMATION FOR SEQ ID NO:11

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 362 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G065

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 1q

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GATCACATTT GCTAACCACT TCTCTCTCTN TCTTTCTTTC TTTCTTTCTT 50
TCTTTCTTTC TNTCTTNCTT TCTTTCTTTC TATCTTCCTT TCTTTACTTT 100
NCTTTNCTNT TCTNTTCTAT TCCTTTANAT TTCTTTTTCT TTCTTTCTCC 150
ATTCTCACNC TGCTANAAAG AACTTCCTGA GACTGGGTAA TTTATANAGG 200
AAAGAAGTTT AATTGACTCA CAGTTCCACA TGTTTGTTGA GGCCTCAGGA 250
AACTTACAAT CNTGGTGGAA NGCAAAGGGG AANCAAGGAC CTTTTTCACA 300
CGGTAGCCCG GGAAATAATT ACAANCAGGG GAAATGCCAN ACACTTATGA 350
AACCATCAGA TC 362

(2) INFORMATION FOR SEQ ID NO:12

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 297 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G085

(vii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 10q

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GATCATGTCA	TTGCACTCCA	GCCTGGGTGA	TACAGCAAGC	CTCATCGAAA	50
GAAAAGAAAA	GAAAAGAAAA	GAAAAGAAAA	GAAAAGAAAA	GAAAAGAAAA	100
GAAAGGAAGA	AAAGAAAACA	AANAGATAGA	AAGCAANCNN	GTGGCNTGAG	150
AANTNAAATT	CTTATAGGTA	ACCTGGAGGA	CTTTTATCTT	TCCAGGAGTC	200
TCTCTCAATG	CATTTAGACT	CAACAANGAT	TTCCTTTTCT	CTTGTCTCTA	250
NAAANAAATG	CATTTCTCTA	AAANANTGGA	GGTCANATTA	TGTTANAGAT	300
GGGAGAATGC	ACTGAGTTNC	GCTGAANGA			329

(2) INFORMATION FOR SEQ ID NO:13

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 372 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G132

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 4 qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

GATCTACCAT	TCTTGGGTCT	GGAGAACAGT	GGCCCTTGTT	TCTTTTCTTT	50
TCTTTTCTTT	TCTTTTCTTT	TCTTTTCTTT	TCTTTTCTTT	CCTTTTCTTT	100
TCCTTTTCCT	TCCTTTTCTT	CTCTCTCTCC	TTCTCTCTCT	CTCTCTCTCT	150
CTCTCTCTCT	CTCTCTCTCT	CTCCCTCTCC	CTTCCCTTCC	CTTCCTTTCC	200
CTTCCTTTCC	TTTCCTTTCA	TTTTTTTGA	CATGGAGTTT	CACTCTTGTC	250
ATCCAGGCTG	GAGTACAGTA	NTGTGATTTT	GGCTCACTGC	AACCTCTGCC	300
TCNTGGGTTC	AAGAGATTCT	CCTGCCTCAG	CTTCCTGANT	AGCTGGGATT	350
ACAGGTGCCT	GCCACCATGC	TT			372

(2) INFORMATION FOR SEQ ID NO:14

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 350 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3zf(+)
- (B) CLONE: G145.1

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

GATCTCTTGA	AGCCTCGCAN	ATAAAGGCTC	CAGTGGGGTA	TGATTGCACC	50
ANTGCACTCC	ANCCTGNGAN	ACGGNAGAGA	GATTCTGTCT	CAAAAGAAAA	100
CAAAATAAAA	GAAAAAATAA	NAAAAAATAA	TAAAAAATAA	TANAAGAAAA	150
GAAAAGGATG	CTTTAAAAAT	NTGGCAAAAT	GTNCCCTTTA	TTGACTACTG	200
CCTTGTTTTA	ATTNCTCTA	TTNCTCTATT	TATTTTCTCA	GTGTACTTTC	250
CCATNTNNCT	TTNCTCTTTC	CTTCTTTGAA	AGTAATTCTT	GGCCAGGCAT	300
GGTGGTTCAT	GCCTATAATC	TCANCACTTN	AGGGGGCTNA	AGCNGGAAGA	350

(2) INFORMATION FOR SEQ ID NO:15

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 372 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3zf(+)
- (B) CLONE: G152

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 8 qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GACCACCTGA	GGTCATGAGT	TCCAGACCAG	CCTGGCCAAC	ATGGCAAAAC	50
CCCGTCTCTA	CTAAAAATAC	AAAAAATAGC	CGGTGTGATG	GTGGGTGCCT	100
GTAATCCCAG	CTACTCAGGA	GGCATGAGAA	TCGCTTGAAC	CTGGGAGGCG	150
GAGGTTGTAG	TGAGCTGAGA	TTGCGCCTCT	GCACTCCAGC	CTGAGTGATA	200
GAGTGAGACC	CCATCTTGAA	AGAAAAGAAA	AGAAAAGAAA	AGAAAAGAAA	250
AAGAAATTCA	TCATTGGGAA	ACATCATGGA	NGGCCGCNAC	CAGTCAGGGG	300
AACATTTCAG	AAAGCNANTT	NTTCTTCCAA	TGCCCTATGT	TNCTTCCCCN	350
AAGCTTGCCA	TTTTNAACCC	TT			372

(2) INFORMATION FOR SEQ ID NO:16

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 361 bp
- (B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)

(B) CLONE: G153

(iv) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 8 qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

GACCACCTGA	GGTCATGAGT	TCCAGACCAG	CCTGGCCAAC	ATGGCAAAAC	50
CCCGTCTCTA	CTAAAAATAC	AAAAAATAGC	CGGTGTGATG	GTGGGTGCCT	100
GTAATCCCAG	CTACTCAGGA	GGCATGAGAA	TCGCTTGAAC	CTGGGAGGCG	150
GAGGTTGTAN	TGAGCTGAGA	TTGCGCCTCT	GCACTCCAGC	CTGAGTGATA	200
GAGTGAGACC	CCATCTTGAA	AGAAAAGAAA	AGAAAAGAAA	AGAAAAGAAA	250
AGAANTTCNT	CATTGGGAAA	CATCATGGAG	GCCGCAGCAN	TCAGGGGAAC	300
ATTTCCGAAA	GCNAGTTGTC	NTTCCAATGC	CCTATGTTNC	TTCCCCNAAG	350
CNTGCCATTT	T				361

(2) INFORMATION FOR SEQ ID NO:17

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 447 bp

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Double

(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)

(B) CLONE: G158

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 5q

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

GATCGCCTGG	GTACAGCAGG	AAAGAAGGGG	GCGGCCACGG	CAAGGCAGCC	50
TCCGACTGCC	CGGCGGGGGA	NGCCGGCGGC	GGCCCCTTCT	CGCCCTCTCC	100
TATAAGCAGT	TTTATAAGCT	TCCTGAGACT	ANAAAAGGAA	AAGAAAAGAA	150
AAGAAAAGAA	AAGAAAAATC	AGTCTCTATT	TTATATGCGT	ATAATTTTTT	200
TTATATGCGT	ATAATTTTTT	TTTAAACCAA	AAACTCNTTA	TGGACAAAAC	250
AAACTACCAT	CCCACTCCAA	ATTATCTCTG	CATCATGCTC	ACAACCTCAG	300
CNCAAAATTC	AATANAANTT	TTATTGGGAT	ATGTTTGGCT	TCCATCAATT	350
GAAATTTCCC	CTAATGAATA	AAATTTCTCT	CCGTTTTTTT	GGTAAACATT	400
TCCCCTTGNA	AGGCCACCT	AAAAATCNCC	NGGNCTTTTT	CCAAAGG	447

(2) INFORMATION FOR SEQ ID NO:18

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 415 bp

(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

5 (ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

10 (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G181

(viii) POSITION IN GENOME:

15 (A) CHROMOSOME/SEGMENT:
(B) MAP POSITION:
(C) UNITS:

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

20 GATCCCAAGC TTCCCGGGTA CCGCGATCAC CTGAGGTCAG GAGTTCAAGA 50
CCAGCCTTCT CAACATGGCA AAACCTCATT TCTACTAAAA ATACAAAAAA 100
TTAGCTGGGC ATGGTCTTGG GTGCCTGTAA TCCCAGCTAC TCAGGAGGCT 150
GAGGCAGGAG AATGTCTTGA ACCCAGGAGG CGGTGGCTGC AGTGAGGCAA 200
NATTTTGCCA GTGTNCTCCA GCCTGGGTGA CAANANTGAA ACTCCGTCTG 250
25 AAAGAAAGAA AGAAAAAGAA AGAAAGGAAG GAAGGAAGGA AGGAAAGGGA 300
AGGAAAGAAA AGAAAAGAAA AGAAAAGAAA AGAAAAGAAA AGAAAAGAAA 350
AGAAAAGAAA AGAAAAGAAA AGAAAAGAAA TNAGATGGGG GAGCTCTACC 400
GAACTGATTC CGATC 415

30 (2) INFORMATION FOR SEQ ID NO:19

(i) SEQUENCE CHARACTERISTICS:

35 (A) LENGTH: 444 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

40 (iv) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G210

45 (iv) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 8p

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19

50 GATCCTATCC TGACAAACTC AAGCAAATTC ACAAATACAA CCCTCTAGCC 50
GGCCCATGGC CTCCCTATTT GGGAGGAAAA AACTCAGTAT GATACTGTGA 100
CATATTTTCT TCATTATCTG TTAAGGTGAG CGTGGCAAAC CTGGCCGAAG 150
TGGCAGAATA TTGGGGCTCA TCACTTGGGG GAATGATTCA GGAGTGGCAT 200
CCTTCTGTGA CCTGTGACAG CCACTTAAGG TTGTGGGATG ACTACTACAA 250
55 AATCCCAAAT AAAGTATATC CTAAAGGCTT TCTTTTCTTT TCTTTTCTTT 300
TCTTTTCTTT TCTCTTCTCA TCTCTTGTCT TCTCTTCTTT TCTCCTCTCC 350
CCTCCCTTCC CATCCCTCTC CCTCTCCTCT CCTTTCCTTG TTTTAAAAAC 400
AATGTCTTGC TCTGTTGACC AGGCTGGAAT GCAGTTCTGT GATC 444

(2) INFORMATION FOR SEQ ID NO:20

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 321 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(viii) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G212

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20

GATCTCCTTC AGTGTACTCA GTGCATTCTC CATCTCTTAC ATAATCTGAC 50
CTCCACTCTT CCTGGAAATG CATTTCCTTT TAGAGACAAG AGAAAAGGAA 100
ATCCTTGTTG AGTCTAAATG CATTGAGANA NACTCCTGGA AAGATAAAAG 150
TCCTCCAGGT TACCTTTAAN ACTTTCATTT CTCCTGCCAC CTGCTTGCTT 200
TCTCTCTCTT TCTTTTCTTT TCTTCCTTTC TTTTCTTTTC TTTTCTTTTC 250
TTTTCTTTTC TTTTCTTTTC TTTTCTTTTC ATGAGGCTTG CTGTATCACC 300
CAGGCTGGAG TGCAATGACA T 321

(2) INFORMATION FOR SEQ ID NO:21

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 329 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G233

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 10q

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21

GATCGCTTGA GCCTTGGAGA TTGAGGCTAC GGTGAGCTAT GATTGCACCA 50
CTGCACTCCA GCCTGGGTGA CAGAGTGAGA CCCTGGGAGA AAAAAAGAAA 100
GAAAAGAAAA GAAAAGAAAA GAAAAGAAAA GAAAAGAAAA GTCNTGACCT 150
TGGAATAAAC CANAATTCTT GATGTTGTAC AACTCCTGAA TTCTGACTGC 200
TCTCTCCNCN GAAAGANGGA ATNNNTGNTC CTTGGAGGAT TCNTACTAAT 250
ATTCTTCGGT CNANACAAAA ACNTGACCTC NAGCCNAGAA AACAANATTN 300
NNCCNTTCCA TAGAAAAGTT CAGGGGACA 329

(2) INFORMATION FOR SEQ ID NO:22

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 412 bp
(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)

(B) CLONE: G234

(iv) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 16 qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22

```
GGATCACGCC ATTGCACTCC ACTCTGGGCA ACAAGAGCAA AACTCCATCT 50
CAGAAAAAAA GAAAGAAAGA AAGAAAGAAA GAGAGAAAAG AAAACAGAAA 100
AGAAAAGAAA AGAAAAGAAA AGAAAAGAAA AGAAAAGAAA AGAAAAGAAC 150
CCNNCAGAAA GCCAAGGCAA TGGGAACAAG CTGGGGCAAG TGCCTGGAGG 200
TGTTGCTGGA AAGGCAGATA GGCAGAGAG CACCTGGACT CTTCCAAAAC 250
ATATTAGCAT CATGGTAAAG CCCTCAGCCC AAGTCCCCCA GAACATAGCC 300
GTAGTCAACC AAGTTGAGAT TGATTACTAG CTTCTGTNA CAAGGGAGAT 350
TATNCNCACA CAAGTGCCAT CTGCCTCTCC CTTACCCAG CTTGAGTTTC 400
GCTTGTAGCA CT 412
```

(2) INFORMATION FOR SEQ ID NO:23

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 359 bp

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Double

(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(A) LIBRARY: plasmid, pGem3Zf(+)

(B) CLONE: G235

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 2p

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23

```
GATCACCAGG CCCCTGAGGA AGCAGCACAG AAAAACACAA ATAATATCAA 50
TATCAGGCAG CCACAGGGGA AACAATGGGG CATTTCTCCG TGCTACATGC 100
ATGCTGCTAT TGTTTCAAGG GCTGGGGAAT TAATTCCACT TATTTATTTA 150
AGGCGTGTCA ACTCACTGCC TAAACCTGTT TCAGTGTCAA AATGGATAAA 200
ACTTTTATGG CTCATAAAAT ANANCCATTC ATCTCAATGT TCTTTGTGGT 250
GGGTTTCTT TTCTTTTCTT TTCTTTTCTT TTCTTTTTC TTTTTCCTTC 300
TGGCATACTG AGCTAAACCT CTGCTCTGAA ACGGTTACAT CTGAACCCAT 350
TGCTGCTAT 359
```

(2) INFORMATION FOR SEQ ID NO:24

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 516 bp

(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

5 (ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

10 (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G331

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24

15 GACTTTCCCA CCTTCTGATG TGGGCATTTA GTGCTATAAA TTTCCCTCTA 50
AACACTGCTT TAGCTGTGTC CCANAGATTC TGGTATGTTG TGTCTTTGTT 100
CTCATTGGTT TCAAAGAACT TATTTATTTT TGCCTTAATT TTGTTATTTA 150
CCCAGTAGTC ATTCAGGAGA AGGTAGTTCA GTTTCCATGT AGTTGTGAAG 200
TTTTGAGTGA GTTTCTTTCC TTTTCTTTTC TTTTCTTTTC TTTTCTTTTC 250
20 CTTTCTTTCT TTCTTTCTTT CTTTCTTTCT TTCTTTCTTT CTTTCTTTCT 300
TTCTTTTGTT TGAGATGGAG TCTTACTCTG TCGCCAGTCT GGAGTGCAGT 350
GGTGTCACTC CAGCTCGCTG CAACCTCCGC CTCCTGGGTT CAANAAATTC 400
CTCTGCCTCA GCCTCCAAG TAGCTGGGTT TACAGGCACA CACCACCACG 450
25 CCCAGCTAAT TTTTGTATT TTANTAAAGA CAGGGTTTCA CCATGTTGAC 500
NAAAATGGTC TCGATC 516

(2) INFORMATION FOR SEQ ID NO:25

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 556 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

35 (ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

40 (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G405

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25

45 GATCTCACAT TCTTCCTCAG AATTCTTCTT GTTACCTCTG CAAAATTTCA 50
TCCTTCAAAC TCAAAGCTCA TTATCTTTGG ACTCTGTGAC ACTCTTCTGA 100
TTCTCATATC ACTTCTTGAT TTTCTGTCAT TTCCTCACTA ACTCTCAGCT 150
CATAATCATA TAAAATCACT AAGACTCTTT TTATATTGTC ATGAAGCTCA 200
GGTATTTTCA CAGATTGAAC CATTTCCTTG TAGACAGCAA TGCTCAACAT 250
50 GAACCATTCA CATCCTTCTT CCAAAGCACA GACTCTTCTT GCCATCTGCG 300
TCATGCCCAT GCTCATGTGC ATGGAGCCTG GTTCATTATC TTCCAAAATC 350
AAGCTTCCCC CACTTGATTT CTCTTTTCTT TTCTTTTCTT TCCTTTTCTC 400
TTTTCTTTT CCCTTTCCCT TTCCTTACCT TTCCTTTTCTT TTCCTTTTCTT 450
CTCCTCTTTT CTCTTTTCTT TTCTTTTCTT TTCTTTTCTT TTCCTTTTCTT 500
55 TTCNTTTCTT TTATTTGCAC CTCACTCTTG CCAAGGCTGG GATGGCAGTA 550
ANCACG 556

(2) INFORMATION FOR SEQ ID NO:26

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 335bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G475

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 15q22.3

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26

GATCACGCCA	TTGCACTCCA	GCCTGGGCGA	CTGAGCAAGA	CTCAGTCTCA	50
AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	100
AAGAAAAGAA	AATTGTAAGG	AGTTTTCTCA	ATTAATAACC	CAAATAAGAG	150
AATTCTTTCC	ATGTATCAAT	CATGATACTA	AGCACTTTAC	ACACATGTAT	200
GTTATGTAAT	CATTATATCA	TGCATGCAAG	GTAATGAGTA	TTATTTTCCT	250
CATTTTATAA	AAGAGGAAAC	TGATGTTTGA	GGCTACTTTG	CTTAAGACCG	300
CAGAACTAGC	AAAGGAAAAG	AGAAGTGAAT	GTATC		335

(2) INFORMATION FOR SEQ ID NO:27

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 333 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY: plasmid, pGem3Zf(+)
(B) CLONE: G539

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 15q26.2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27

GATCGTGCCA	CTGCACTCCA	GCCTGGGCAA	CAGAGTAAGA	CTCAGTCTCC	50
AAAAAAAAAA	AAAGAAAGAA	AGAAAAAGAA	AGAAAGAAAG	AAAGAAAGAA	100
AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	AAGAAAAGAA	150
AAGAAAAGAA	AAAGAAAAAG	AAAAAATAAA	GAGGTGAACG	GTAAGTGAACA	200
GAAACTAAGA	AGGCTGAGAG	CCAACTCTGA	GGTAACAGCT	AGGAGCTGAA	250
GCAGGAAAGC	TAAATCTGTC	CCCAGTCCCA	TTGCTGATAG	ACTCACCATT	300
TACTAACAGA	GAAACCATTG	CTCCTTTTAG	ATC		333

(2) INFORMATION FOR SEQ ID NO:28

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1011 bp

(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

5 (ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

10 (A) LIBRARY: plasmid, pGem3Zf(+)

(B) CLONE: S023

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28

15 CTGTACTGAA TTACAGCCCC AAATCTGGGT CAACTGGGGA GAGACGACGA 50
GGATTAGGGT TCCAAGGTGA AACTGTGCCA TTGCGCTCCA GCCTGGGCAA 100
CAAGAATGAA ACTCTCTTAA AATAAAATAA AATAAAATAA AATAAAATAG 150
CCTAAGGATG CATTTCTCAG AACTTATCCC TGTGTGTTCAA TGATGTGTGT 200
CTATACAGTG GGGCCATAAC TAAGACGTAT GTTGCCCAAG CTGGCAAGAT 250
20 AGCTCTGACC TTCTCTTGGG CCCCTCATTT CCCCCAAACA CAGGTTGTCT 300
GCAGTCTTGA CCAATGGCTG CCAGGGCATG GACTCCGCTG CAGGGGCCAG 350
TGGGAGGCC CAGCTCAGGC AAAAGCACAG GCAGATATTT CAGGAGTCTG 400
CTAGGGCTGG CACTGAGGGC AGAGACAGAG GGGTCTCCCT GTCCTTTGGA 450
GAACCTCACG CTGCAGAAAT TCCAGACTGA ACCTTGATAC CGAGTAGGGG 500
25 AGGAGCTGTC TGCGGGTTTG AGCCTGCAGC AGGAGGAAGG ACGTGAACAT 550
TTTATCAGCT TCTGGTATGG CCTTGAGCTG GTAGTTATAA TCTTGGCCCT 600
GGTGGCCAG GGCTACAGTC ATCCTAGCAG TCCCGCTGA AGTGGAGCAG 650
GTACAGTCAC AGCTGTGGGG ACAGCAATGC TGGCCAAGGG TCTTCCCCCA 700
CGCTCAGTCC TGGTCAAAGG CTGCCAGACC TTTCTGAGTG CCCCCAGGGA 750
30 GGGGCTGGGG CGTCTCAGGG TGCCCAGTGG CGAGGGAGCT GGCATCTCCA 800
CCCGCAGTCC TCGCCCCTTC AATGAGATCC CCTCTCCTGG TGACAATGGC 850
TGGCTAAACC TGTACCATTT CTGGAGGGAG ACGGGCACAC ACAAAGTCCA 900
CCTTCACCAT GTCCAGAATT TCCAGAAGTA TGGCCCGATT TACAGGTAAG 950
CCTGGCAGAG GGTGGGAGCC GAAGGACAGG GAGGAGGAGG GGACTGGGTA 100
35 0GCCCTGCTGT A 1011

(2) INFORMATION FOR SEQ ID NO:29

(i) SEQUENCE CHARACTERISTICS:

40 (A) LENGTH: 1011 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

45

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

50 (B) CLONE: S071

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 6q26-27

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29

55

CTGTACTGAA TTACAGCCCC AAATCTGGGT CAACTGGGGA GAGACGACGA 50
GGATTAGGGT TCCAAGGTGA AACTGTGCCA TTGCGCTCCA GCCTGGGCAA 100
CAAGAATGAA ACTCTCTTAA AATAAAATAA AATAAAATAA AATAAAATAG 150

CCTAAGGATG CATTCTCTCAG AACTTATCCC TGTGTGTTCAA TGATGTGTGT 200
CTATACAGTG GGGCCATAAC TAAGACGTAT GTTGCCCAAG CTGGCAAGAT 250
AGCTCTGACC TTCTCTTGGG CCCCTCATTT CCCCCAAACA CAGGTGTGTCT 300
GCAGTCTTGA CCAATGGCTG CCAGGGCATG GACTCCGCTG CAGGGGCCAG 350
TGGGAGGCC CAGCTCAGGC AAAAGCACAG GCAGATATTT CAGGAGTCTG 400
CTAGGGCTGG CACTGAGGGC AGAGACAGAG GGGTCTCCCT GTCCTTTGGA 450
GAACCTCACG CTGCAGAAAT TCCAGACTGA ACCTTGATAC CGAGTAGGGG 500
AGGAGCTGTC TGCGGGTTTG AGCCTGCAGC AGGAGGAAGG ACGTGAACAT 550
TTTATCAGCT TCTGGTATGG CTTTGAGCTG GTAGTTATAA TCTTGGCCCT 600
GGTGGCCAG GGTCTACATC ATCCTAGCAG TCCCCGCTGA AGTGAGCAG 650
GTACAGTCAC AGCTGTGGGG ACAGCAATGC TGGCCAAGGG TCTTCCCCCA 700
CGCTCAGTCC TGGTCAAAGG CTGCCAGACC TTTCTGAGTG CCCCAGGGA 750
GGGGCTGGGG CGTCTCAGGG TGCCCACTGG CGAGGGAGCT GGCATCTCCA 800
CCCGCAGTCC TCGCCCCCTC AATGAGATCC CCTCTCCTGG TGACAATGGC 850
TGGCTAAACC TGTACCATTT CTGGAGGGAG ACGGGCACAC ACAAAGTCCA 900
CCTTCACCAT GTCCAGAATT TCCAGAAGTA TGGCCCGATT TACAGGTAAG 950
CCTGGCAGAG GGTGGGAGCC GAAGGACAGG GAGGAGGAGG GGACTGGGTA 1000
GCCCTGCTGT A 1011

(2) INFORMATION FOR SEQ ID NO:30

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(B) CLONE: S085

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 22q11

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30

AGTCAAATGA CGGTCATAGT TTGGGTGATG GTCACGGCTC AGGTTCTTTT 50
TTACACGTGC TTGCTTTGGT TGTGTGTGTT GTTCTTTGTT TTCTTGAGGC 100
AGTATCTGGC TGTGTCTCCC AGGCTGGCGT GCAATGGCAG GATCATAGCT 150
CACTGCAACC TCAAACCTCCT GGCTGAAGCA ATCTTTGTGC CCTAGCCTCC 200
CAAGTTGTTG GGATTACAGT CGTGCCCCAC CATGCCTGGC TAAGTTGTTT 250
TTTGTTTTTT GTTTTTTTTT TTTTTTTCGA GACAGAGTTT TGCTCTTGTT 300
GCCCAGGCCG GAGTGCAGTG GTGTGATCTT GGCTCTCTGC AACCTCCCGG 350
GTTCAAGCGA TTCTCCTGCC TCAGCCTCCC AAAGTGATGG GATTACAGGC 400
CTGAGCCACT GTGCCTGGCC ACATGTGCTT TCCCATTCTG TCCTTGACAGC 450
AGATCTTTGA GAGAGCTCAT TTGACACTCA GGAGATGCTT CTCTAACCTG 500
CTCAGAATCA GGGCCCTGGG TATTCAGGGA GGTAGAGGGA GCAGACTGCA 550
AAGCCAGTCG TGCTCCCATC GCTCCCACTT CTCTCTCCCT CTCCATGTTT 600
TCTGTCTCCC CCACCCAGCC TAGGGCATTC CTCCCCACA GTCCAGCCTG 650
CATCTGGCAC AGTGTCACTG CTCAGCCCAG GGATACTCAC AGCCTGGGTG 700
CCTGGCTCCT TTTTTCAGCT CATCAAACCA GGTAAAGGGA GGTTCAGATT 750
CTGCCAACCA TTGACTCAAT TCATCCAAAT CTTCAATCAC TGGAATCCTG 800
GGAGTGGCTG GATTTGAACC AGGACCTCTG AGTACTATTG CTAAGTAACT 850
GGGGGTCTCA GTGAAAGAGA GAAAAGAGCT GATAGGCCTC TTCCTGTGTT 900
ATCATGTCAG GCCATCTTTT GAAACTCTTT TCTGCAATGC TACTGAAGTA 950
TTTATGCACG TGACCTGTGC TCTTCTGTCA GTCTAGGGGT GCTGGCTGAG 1000

(2) INFORMATION FOR SEQ ID NO:31

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY:

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY:
(B) CLONE: S125

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 22q11.2-qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31

AGTCAAATGA	CGGTCATAGT	TTGGGTGATG	GTCACGGCTC	AGGTTCTTTT	50
TTACACGTGC	TTGCTTTGGT	TGTTGTTGTT	GTTCTTTGTT	TTCTTGAGGC	100
AGTATCTGGC	TGTGTCTCCC	AGGCTGGCGT	GCAATGGCAG	GATCATAGCT	150
CACTGCAACC	TCAAACCTCT	GGCTGAAGCA	ATCTTTGTGC	CCTAGCCTCC	200
CAAGTTGTTG	GGATTACAGT	CGTGCCCCAC	CATGCCTGGC	TAAGTTGTTT	250
TTTGTTTTTT	GTTTTTTTTT	TTTTTTTCGA	GACAGAGTTT	TGCTCTTGTT	300
GCCCAGGCCG	GAGTGCAGTG	GTGTGATCTT	GGCTCTCTGC	AACCTCCCCG	350
GTTCAAGCGA	TTCTCCTGCC	TCAGCTCCCC	AAAGTGATGG	GATTACAGGC	400
CTGAGCCACT	GTGCCTGGCC	ACATGTGCTT	TCCCATTCCG	TCCTTGACAGC	450
AGATCTTTGA	GAGAGCTCAT	TTGACACTCA	GGAGATGCTT	CTCTAACCTG	500
CTCAGAATCA	GGGCCCTGGG	TATTCAGGGA	GGTAGAGGGA	GCAGACTGCA	550
AAGCCAGTCG	TGCTCCCATC	GCTCCCACCT	CTCTCTCCCT	CTCCATGTTT	600
TCTGTCTCCC	CCACCCAGCC	TAGGGCATTC	CTCCCCCACA	GTCCAGCCTG	650
CATCTGGCAC	AGTGTCACTG	CTCAGCCAG	GGATACTCAC	AGCCTGGGTG	700
CCTGGCTCCT	TTTTTCAGCT	CATCAAACCA	GGTAAAGGGA	GGTTCAGATT	750
CTGCCAACCA	TTGACTCAAT	TCATCCAAAT	CTTCAATCAC	TGGAATCCTG	800
GGAGTGGCTG	GATTTGAACC	AGGACCTCTG	AGTACTATTG	CTAAGTAACT	850
GGGGGTCTCA	GTGAAAGAGA	GAAAAGAGCT	GATAGGCCTC	TTCCTGTGTT	900
ATCATGTCAG	GCCATCTTTT	GAAACTCTTT	TCTGCAATGC	TACTGAAGTA	950
TTTATGCACG	TGACCTGTGC	TCTTCTGTCA	GTCTAGGGGT	GCTGGCTGAG	1000

(2) INFORMATION FOR SEQ ID NO:32

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (B) CLONE: S132

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 22

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32

	GGTGTGACCT	TATCCTCTCT	GAACCTCAGT	TTCCTCATCC	GTAAATGAA	50
	AAGCTGCTAG	ATTGTTGTAA	AAAAATTAA	TGGAATAGGC	TAGGCGCGGT	100
5	GGCTCACGCC	TGTAATCCCA	GCACTTTAGA	AGGTCGAAGA	GGGTGGATCA	150
	CTTGAGGTCA	GGAGTTTGA	GACCAGCCTG	GCCAACACGG	TGAAACCCCA	200
	TCTCTACTAA	AAATAAAAAA	TTAGCTNNGG	TGCGGTGGCT	CACACCTGTA	250
	ATCCCAGCAC	TTTGGGAGGC	TGAGACGGGT	GGATCACCTG	AAGTCAGGAG	300
	TTCAAGGCCA	GCCTGGGCAA	CATGGTGAAA	CCACGTCTCT	ACTAAAAATA	350
10	CAAAAATTAG	CCAGGTGTGG	TGGCACACGC	CTGTAGTCCC	AGCTACTTTGG	400
	GAGGCTGAGG	CGGAAGAATC	GCTTGAACCC	AGTAGGCAGA	GGTTGCAGTG	450
	AGCCGAGATA	AGAGTCACTG	CACTCCAGCC	TGGGTGACAG	AGCAAGACTC	500
	CCTCTCAGAA	AATAAAATAA	AATAAAATAA	AATAAAATAA	AATAAAATAA	550
	AATAAAATTC	TAAAAGGGCT	GGCATTTGCC	TAGCACTTAT	ATGCCCAATA	600
15	AGTAATAGCT	ATCAATATCC	CCACCCCTAC	CACTGTGCTG	AAATTTAGTT	650
	TCTTTTTGTC	ACCCCCCAT	AGACTTAAGG	CAGAATTCTC	ACCGTACTCC	700
	TCTGTAAATT	TCTGGTTTCT	GGCACATAGT	TGGGTCTCAG	TGAAACATGG	750
	TGAGTGAATG	AGCAAATGCA	AGGAATCTCC	AGGCCATCTG	GGAGCCCTCC	800
	CAGGCGGGTG	AGTTCGGGAA	ACTCATAGTC	TGTCCTCAAT	GGCCCACTGA	850
20	AAGGTAGAGA	GTTCTGGGTC	CCACCTCCGC	ACCCCATCT	CCTGACTCAC	900
	TGCTGAAAAA	TAAATAAATA	AATAAAATAA	CACCTATCCG	GAGCCTCCCA	950
	CATGCCTTGC	CAGGACTGCA	AGGAGCCCAG	CAGAATGATG	ACCGGCGTGC	1000

(2) INFORMATION FOR SEQ ID NO:33

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (B) CLONE: S136

(viii) POSITION IN GENOME:

- (A) CHROMOSOME/SEGMENT: 22q12-qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33

	CCACTACATA	TCCCATACAG	GCTAATCAAC	ATGTCAAAGT	TCACACAGTT	50
	ATTGTGTACC	CCTGGGCTCA	ATCTCAAGTG	TTCTGGTTGG	TCGTCCAAGG	100
45	TTACTTTTTT	TTTTTTTTTT	TTTTTTTTGA	GATGGAGTCT	TGCTCTGTTG	150
	CCCAAGCTGG	AGTGCAATGG	CATGATCTTG	GCTCACTGCA	ACCTCCGCCT	200
	CCTGGGTTCA	AGGGATTCTC	CTGCCTCAGC	CTCCTGAGTA	GTTGGGATTA	250
	CAGGCATGCA	CTACCATGCC	TGGCTAATTT	TTGTATTTTT	AGTAGAGGTG	300
	GAGTTTCTCC	ATGTTGTTCA	GGCTGGTCTT	GAACCCCAA	CCTCAGGCAA	350
50	TCCACCTCGG	CCTCCCAAAG	TACTGGGGTT	ACAGGCATGA	GCCACTGCGC	400
	CTGGCCCAAG	GTTACTTTTC	ACTACATCTT	CCTACCTGTA	TCACTTACTG	450
	CCGTGTGTAT	AACTTCCACA	TTTTCTTTCT	TTTCTTTTCT	TTTCTTTTCT	500
	TTTCTTTTCT	TTCTTTTCTT	TCTTTCTTTC	TTTCTCTCTC	TTTCTCTCTC	550
	TCTTTCTCTC	TGTCCCTTCC	TTCTTTCTCC	TTCTTTCTTC	CTTCTTCTCT	600
55	TCCTTTCTCT	CCTTCTTCTC	TTCTTTCAAC	ACAGAGTCTC	ACTCTGTCTC	650
	CTAGGCAGGA	GTGCAGTGCC	CCAGTCTCAG	CTCACTGCAA	CCTCCGCCTC	700
	CTGGGCTCAA	GCAATTCTCT	CACCTCAGCC	TCCCGAGTAG	CTGGGATTAC	750
	AGGCATGTGC	CACCATACCC	AGCTAATTTT	TGTATTTTGA	GTAAGACGCG	800

GATTTACCA TATTTTCCAA GCTGGTCTCG AACTCCTGAC CTCAAGGGAT 850
CTGCCCCGACT CAGCCTCCCA AACTGCTGGG ATCATAGGTG TGAGCCATCA 900
TGCTTGGCCC ACACCTTCTA TGTTAATCTA ATTTAGATGA TTTAATCTAT 950
ATACAGTTTC TATATTAATC TAATTTAGAT GACTTAATCT ATATACAAC 1000

(2) INFORMATION FOR SEQ ID NO:34

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(B) CLONE: S159

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 21q22-qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34

AAACCCCGTC TCTACTAAAA ATACAAAAGT TAGTTGAGCA TGGTGGCACG 50
GGCCTGTAAT CCCACCTATA ATCCCACCTA CTCGGGAGGC TGAGGCAGGA 100
GAATCGCTTG AACCCAGGAT GGGGCGATTG CAGTGAGCCG AGATCGTGCC 150
ACTGCACTCC AGCCTGGGTG ACAGAGCGAG ACTCCATCTC AAAAAAAAAA 200
AAAAAAAAACA GAATCATAGG CCAGGCACAG TGGCTAATTG TACCTTGGGA 250
GGCTGAGACG GGAGGATCGA GACCATCCTG GGCACCATAG TGAGACCCCA 300
TCTCTACAAA AAAAAAAAAA AATTTTCTTTT AAATAGCCAG GCATGGTGAG 350
GCTGAAGTAG GATCACTTGA GCCTGGAAGG TCGAAGCTGA AGTGAGCCAT 400
GATCACACCA CTACACTCCA GCCTAGGTGA CAGAGCAAGA CACCATCTCA 450
AGAAAGAAAA AAAAGAAAGA AAAGAAAAGA AAAGAAAAGA AAAGAAAAGA 500
AAAGAAAAGA AAAAACGAAG GGGAAAAAAA GAGAATCATA AACATAAATG 550
TAAATTTTCT CAAAAAATC GTTATGACCA TAGGTTAGGC AAATATTTCT 600
TAGATATCAC AAAATCATGA CCTATTAAAA AATAATAATA AAGTAAGTTT 650
CATCAAAACT TAAAAGTTCT ACTCTTCAA AGATACCTTA TAAAGAAAGT 700
AAAAAGACAC GCCACAGGCT AAGAGAAAGT ACTTCTAATC ACATATCTAA 750
AAAAGGACTT GTGTCCAGAT TAAAGAATTC TTACACATCA ATAAGACAAC 800
CCAATTAAAA ATCGGCAAAA GATTGAAGA GATATTTAAC CAAAGAAAAC 850
ATATAAATGT GTCCGGGCGC GATGGTAATC CCAGCACTTT GAGAGGCCGA 900
GGCAGGCGGA TCACTTGAGG TCAGGAGTTT AGGACCAGTC TGGCCAACAT 950
GGTGAAACCC TGTCTCTAAT AAAAATACAA AAATTAGCTG GGTGTGGTGG 1000

(2) INFORMATION FOR SEQ ID NO:35

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1400 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(B) CLONE: S176

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 7q21-7q22

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35

5	CCATATGTTT	GTTTCCTCTA	CTACTGCTCC	TCCCTGACCC	TTAAGAAACA	50
	CTGCCATAGA	GCCCTACAGC	TTGATGGGAG	AAGTCCTATC	CCTTAGGCAT	100
	GGAAAGCTAT	TAAGAATGTG	AGAAGTGTGT	ATGAGGAAAC	TAATTTAATA	150
	ATTCTTAGA	ATGGAACCAG	TTGAAAATTT	CCAGCTCCAC	AACTGAAGT	200
10	GAAATCATT	TTTCTCCACT	CCTTACTAGT	AAATTTACTG	TTCTATGTTA	250
	AAAGAAAAAA	AAAATCAACC	AGCATTTAAA	TTATGGCAAC	CTAAAATGTG	300
	TCCAGTATCT	TAGAATAATT	TCCCCACTGA	CCTATTCTCT	TGTAATAGTA	350
	AAACATATAC	ACAAATGTTT	ATAGCTACAT	TAGTCATAAT	AGCCGAAAGG	400
	TAAAAACAAC	CCAAATGCCC	ATCAACTAGA	TAAATGTATT	TAAAAAATAT	450
15	GACCCAGGCG	AGGTGGCTCA	GGCCTGTAAT	CCCAGCACTT	TAGGAGGCTG	500
	AGGTGGGTGG	ATGACCCAGG	AGTTCAAGGC	CAACCTGGTG	AACATAGTGA	550
	GACCCCCTCT	CTACAAAAC	AAAAATAAAA	AATTAGCCAG	ATGTTGTGGT	600
	GTACACCTGT	AGTCCAAGCT	ACTCAGGACG	GTGAGGAAGG	AAGATCACTT	650
	GAGCCCGGGA	GTTTGAGGCT	GCAGTGAGCT	ATGATCACAC	CATGGCACTC	700
20	CAGCCTGGGC	AAGAAAGTGA	GACCAAATTA	TTAAAAAATA	AAAAAATAAA	750
	AAAAAATAAA	AAAAACAGA	AGAAGAAGCA	CTGATGCATA	GGCCATGAAT	800
	AAACTTTGTA	AATATTATGC	TAAGTAAAG	AAGCCAGAGA	TGAAAATCAC	850
	ATATTGTAAT	TGTATGACTC	CATGTGTTTT	TTTAAAAAGG	TCCACACAGA	900
	AAAGCTATTA	GTAGTTGCTC	ACAGCTGGAA	GGCAAGGAGG	GCACGTAAGT	950
25	GGGTGATAGC	TATAGGACAC	AAGGATTATT	TCTGAAATGA	TGAAAATGTT	1000
	CTAAAACCGT	GGTAATGGTT	TTACAACCTT	GTGAATATAC	TAAAAACTAC	1050
	TGAATTGTAT	ACTTAAATG	GGTGAATTAG	ACGGCATATG	AATTATATAT	1100
	CAATAAAGGT	ATTACCCAAG	AAAAAGAATA	CAGTATCTTC	ATATTCTATA	1150
	TTCTCCTCTC	TTAGCTTTAC	TCAGATTTCA	CCTCTGTCCA	GTCACCTTTC	1200
30	CACATTAAC	CCAGGCAACT	CCAAAAGTTA	TTCTTCCTGC	TTCATTCATC	1250
	CCCCAAATAA	ATTACATTCA	CTACTGCGAA	GATAACTGGC	CAGAAACTCA	1300
	ATTCCTGAAG	TTCTGGCAAA	TGGTTCCTAG	ACTCCAAATG	GAGCAGAATA	1350
	ATTTGCAACT	GGGCTTAAAC	ACGATTGTCT	TTTTTAAGGC	ATCCTCAGTT	1400

(2) INFORMATION FOR SEQ ID NO:36

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1250 bp

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Double

(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(B) CLONE: S189

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 22q11.2-qter

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36

55	GTGCTCTGG	CGATTGCGAA	CTCGAAAATG	ACACTTACTA	TTCAGCTAGA	50
	GATTAGAATC	TCAAGCAGTA	GGGCATTTTT	TAATAAAAAA	TTAAATTAAA	100
	AATAGATTTG	CCATTGTCTG	CTTAATAAAA	CTAGTAGCTC	TGCTGGCTTA	150
	GAGGGGAAAT	AACATATTTT	TTCGGATTTT	TATATATTCA	TCTGAGCAGT	200
	GCTAAAAAAT	AAAACAAAGT	TACTAATATT	CATATCTTGA	GCAATTGTAC	250

ATTGCTTCTA ACTATACATT CAATCTCTCT GGCACATCCA CTGTGGCCCT 300
GAGCAGCCAG TACAGGCTCT TCTACCAAAA CGAAGCAAGC CACTCCAAAA 350
CCTGACGCGT GCAGGTGTCA CGAAACACCA GGTGCAGCTT GACAGATGTG 400
AGCCAAATAA GGAAACATTC AGCCCAGCAC TGCCCAACAG TCATGATGTA 450
TATTTTCTAC ATCTGTGCTC TAAATATATGG TGGCCACTAG CTGCAGGTGG 500
CTATTGAGAC TAAGGAACTG TATTTTAAAT TTTATTTTCAT TTCAACTCAT 550
TTAAAGTAGC CACATGCCGC TAATGGCTAC TGATCTAGAG GGCAGCTGGG 600
ATGTTACTCT TGAGAATGTC TCCAGCATTT TACCTGTTGC TCTCTCTCAC 650
TCACATTTCC CATTCTAGCA CAAACAAAAC AAAACAAAAC AAAACAAAAC 700
AAAACAAAAC AAAACAAAAA AACCACAACA CCTACAGTTC TCCAAACAGG 750
GCATCTGTTT TGTTCTCTCTG GGGGGGTCCT GTCTATGTTG TTCACGTGGC 800
CCTGGATTTT CATACTCCTA GCCTTCCTGG AAGACATCCT TTTTCATCCTC 850
ACAACCCAAC CCAGGCTTTA TCTCTTCTGT GAAGCTGTCC TTGATTTTCC 900
GTTCTATCTT CCCTGCTTGT GAATGGGTCA GCTCTCCTTC CCCACCGCCC 950
TGTGCGTGTG AACATCTTTG TTCAGTATAC TGCAGTGGGT CGGGAGTATG 1000
TCCCTTCCAG ACTGGAAGGC AGAGAGGGTG GCTGTAAGGA TTGGCACTTT 1050
GGGCCAGGCA CAGTGCTCAT GCCTGTAATC CCAGCACTTT GGGAGGCTGA 1100
GGCAGGAGAA TCGCCCGACC CCAGGAGACA GAGTTTGCAG TGAGACGAGA 1150
TTGCACCACT GCACTCTAGC CTGAGGGATA GAGCAAGACT CCCTCTCAA 1200
AAAATAAATA AATAAATAA TAAATAAATA AAAATAAAAA ATTAAAGAGG 1250

(2) INFORMATION FOR SEQ ID NO:37

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1200 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

(B) CLONE: S199

(viii) POSITION IN GENOME:

(A) CHROMOSOME/SEGMENT: 6q21

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37

TTTCATGTTT ACAGATTGGA TTAATATTGT TAAACTGTCC ATACTACCCA 50
AAGCAATCCA TAGATTCAAT GCAACCCTGA TATAGTTTGA ATGTATGTAG 100
GCACCAAAAT CTCATGTTGA ACTTTAATCC CCAGTGTTGG AGGTGGAGCC 150
TGGTGTAAGA TGTTTAGATT ATGAAGGTGA ATCCCTCATG AACGGCTTGG 200
GCCATCTGCT TGGTGATAAG TGAGCTCTTG TTCTGAGTTC ACATGAGATA 250
CAGTCATTTA AAAGCCTGTG GTACCCAAAC TCTCTCTTGC TCTTGCTTCT 300
GTTACGCCA TGTGATATAC CTGCTATCCT TTGCCTTTGC CTTCTGCCAT 350
GATTGGAAGC TTCTGAGTC CTCCCCAGAA ACAGATGTAA CTATGCTTCC 400
TGTACAGCCT GCAGAACCAA GAACAACTG AAACCTTTTT GTTATAAATT 450
GCCCAGGATT AGGTGGGTGT TTTGTTTTGT TTTGTTTTGT TTTGTTTTGT 500
TTTTTGAGAT GGAGTCTCGC TCTGTCTCCC AGGCTGGAGT GCAATGATAC 550
AATCTCGGCT CACTGCAACC TCCACCTCCC CGTTCAAGCA ATTCTCCTGC 600
CTCAGCCTCC TGAGTAGCTG GGATTACAGG CGCACGCCAT CATGCCCGGC 650
TAATTTTTGT ATTTTATAGTA GAGACGGGGT TTCACCACAT TGGTCAGGCT 700
GGTCTCGAAC TCCTGACCTC ATGATCCACC CGCCTTGGCC TCCCAAAGTG 750
CTGGGATTAC AGGCGTAAGC CACCATGCCC AGCCAGGTGG TTTTATATAG 800
TAGTGCAAGA ATGGCCGAAT ACAAACCCCT ATCAAAATAC CAATGACATT 850
TGTCAGGGAC ATTTTAAAAA ATTCTGAAAT TTATATGGAA CCACAAAAGA 900

CCCAGAATAG CCAAAACTAA CCTGAGCAAA AAGAACAAAC CTGGAAGAAT 950
CACATTACCT GACTTCAAAG TGTACTACAG AGCTCTTATA ATCAAAACAT 1000
CATGGTACTA GCATAACAAC AGACACATAG ACCAATGGAA CACAATAGAG 1050
AACCCAGAAA CAAATCCATA CACCTACTGT GAACTCATTT TTGACAAAGG 1100
TGCCAAGAAC ATACATGGGA GAAAGGACAG TATCTCCAAA TAAATGGTGC 1150
TGAGAAAAGT GGATATACAT ATGCATAAGA ATGTAAGTAG ACCCCTATCT 1200

(2) INFORMATION FOR SEQ ID NO:38

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (B) CLONE: S040

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38

GCTGCAATAA ACACGGGAGT GTAGGTATCT TTAAAAGAAG GTGGTGATTT 1900
CATCTCTTCT GGGTATGTAT CCAAAATAGG GTCAGTGTG GGTATAAAGG 1950
TGGTTAGGTT TTGAATTTCT TTAGGAACCT CCATACTGTT TTCCATAATG 2000
GGTGACCAA TCATCATTC CACCAACAAT GTACAAGTGT TTTATTTTCT 2050
TCACACCCTC ATCAATATTT ATCTCTTGTC TTTTTTATAA TAGCCATCCT 2100
AAAGACTGTA AGGCGTTTTA TTTCTAATCT CAGATTTTAC TGTAGAAACA 2150
GTGATGACAC AGTCTCCAGC TTCCCTGTCT TTGTCTCTGG AGAAAAAGC 2200
CACCCCTGACT TGCAGGGCCA GTCAGTGTTA GCAGCTACTA AGCCTGGTAC 2250
CAGAAGAAAC CTGAGCGGGT TCCCAGGCTC CTCATCTATG GTACAGCCCT 2300
GATTTGTGAT AGTGGGTCGG GGACAGGGCT TACTCTCACC ATCGGCAGCC 2350
TGGAGCCTGG AGCCTGGAGA TTTGCACTTC ATCACTGTTA TCAGCATAGT 2400
AGTTGGTGTC CCATACTGAT TCGACATGCA ACAAAAACCT CCAGGAGACC 2450
TAAGGTGTTT ATTTGATTAT ACTACCTGCT TCCTTTT TAG TCATCTGATG 2500
TGGTGCTGCT CAGTTTTAGC ATCTCTGCTT TGATTGGAAA TTCTGAGGTT 2550
CTCAAAAGTA ATTCCTTATA ATATTTATAG TTTCACTCAT GGATTTTTTTT 2600
CTCAGACCCA AATGTACAGC CAGGTTTCAGG CACAATTTCA TGGTCAAGGC 2650
CATTGGATCA GACTCACATG AGTGGACGCC TCTAAAGGTC CTGGCCAGTG 2700
CGATAAAGTA GCAGCGACAA TGATAAAGAA GAAGAATTAG AAAGGCAGAA 2750
TTAAAGGTAT AACAATTCAC TGATGAAAGG ACTGTGTGGG GGAGAAATTT 2800
CTAATTGTCT ACACAGAAAT TATTAGAATT AATGAGATAC ATAGCAAATT 2850

(2) INFORMATION FOR SEQ ID NO:39

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1050 bp
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Double
(D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY:
(B) CLONE: S066

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39

	GGGGCCTAGC	CCAGTTGGAG	GGACAAGAGC	TGGAAACTGG	GTTCTTAGG	50
	GTGGTGCCAG	AGTGGGCAGA	GACCTCTGGG	CAGCCCACGT	CCAAGTCCAG	100
5	AGCAAGGGGA	GGCTCATCCT	AGAAAAGAGG	CCAGAGGAGC	CATAACCACC	150
	ATTGTTCTT	GGGTAAAGGA	GTCCTTTTTT	AAAACCATCA	AAACTAAGAA	200
	TCCAGTGCAT	TATGAATCCA	AGGGGTGAGG	CTCAGTGTGC	CAATGCCCCA	250
	GAACAGTCTA	AGAAAGCTCC	TTTTCCCTTT	CCAGGCAGCT	CGAGCTTTAC	300
	CTTCCCAAAT	TCTCCATTGA	GGGCTCCTAT	CAGCTGGAGA	AAGTCCTCCC	350
10	CAGTCTGGGG	ATCAGTAACG	TCTTCACCTC	CCATGCTGAT	CTGTCCGGCA	400
	TCAGCAACCA	CTCAAATATC	CAGGTGTCTG	AGGTGGGTTC	AGAAGCTCCT	450
	ATGCATCTGC	TTCCCAAGAT	CTATTCTGTT	CTATTCTTTC	TATTCTACTC	500
	TACCCCATTT	CATTCCATTC	CATTCCACTC	AACTCCACTC	CACTCCACTC	550
	CACTCCAGTT	CACTCTATTC	AATTCCACTC	CACTCCAGTT	CACTCTATTC	600
15	AATTCCACTC	CACTCCACTC	CAGTTCACTC	TATTCACTTC	CACTCCACTC	650
	CACTCCACTC	CACTCCAGTT	CACTCTATTC	CATTCCACTC	CATTCCACTC	700
	CTCCACTCCT	CTCATCCACT	CCACTCTACT	CCTCCACTCC	ACATCTCCAC	750
	TCCACTCCTC	CACTCCACTC	CTCCACTCCA	CTCATCCACT	CCACTCCTCC	800
	ACTCCACTCC	TCCACTCCAC	TCCTCCACTC	CACTCCACTC	ATCCACTCCA	850
20	CTCTTCCATT	CCACTCCATT	CCACTCCTCC	ACTCCACTCT	TCCACTCCAC	900
	TCCATTCCAC	TCCTCCACTC	CACTCCACTC	TATTCTATTC	TATTCCATTC	950
	CATTCTACTC	TATTCTATTC	CATTCCATTG	CAGTCAACTC	CACTCCACTC	1000
	TCTACTATTC	TATTCCACTC	CTCTCCCCTC	CACTCCATTC	CATTGCAGTC	1050

(2) INFORMATION FOR SEQ ID NO:40

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 4580 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY:
- (B) CLONE: S077

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40

	GGATCCCAAT	TCATTCCGGG	CTGACACGCT	CACTGGCAGG	CGTCGGGCAT	50
	CACCTAGCGG	TCACTGTTAC	TCTGAAAACG	GAGGCCTCAC	AGAGGAAGGG	100
	AGCACCAGGC	CGCCTGCGCA	CAGCCTGGGG	CAACTGTGTC	TTCTCCACCG	150
45	CCCCCGCCCC	CACCTCCAAG	TTCTCTCCCTC	CCTTGTTGCC	TAGGAAATCG	200
	CCACTTTGAC	GACCGGGTCT	GATTGACCTT	TGATCAGGCA	AAAACGAACA	250
	AACAGATAAA	TAAATAAAAT	AACACAAAAG	TAACTAACTA	AATAAAATAA	300
	GTCAATACAA	CCCATTACAA	TACAATAAGA	TACGATACGA	TAGGATGCGA	350
	TAGGATACGA	TAGGATACAA	TACAATAGGA	TACGATACAA	TACAATACAA	400
50	TACAATACAA	TACAATACAA	TACAATACAA	TACAATACAA	TACAATACGC	450
	CGGGCGCGGT	GGCTCATGCC	TGTCATCCCC	TCACTTTGGG	ATGCCGAGGT	500
	GGACGCATCA	CCTGAAGTCG	GGAGTTGGAG	ACAAGCCCAG	CCAACATGGA	550
	GAAATCCCGT	CTCAATTGAA	AATACAAAAC	TAGCCGGGCG	CGGTGGCACA	600
	TGCCTATAAT	CCCAGCTGCT	AGGAAGGCTG	AGGCAGGAGA	ATCGCTTGAA	650
55	CCTGGGAAGC	GGAGGTTGCA	GTGAGCCGAG	ATTGCGCCAT	CGCACTCCAG	700
	TCTGAGCAAC	AAGAGCGAAA	CTCCGTCTCA	AAAATAAATA	CATAAATAAA	750
	TACATACATA	CATACATACA	TACATACATA	CATACATACA	TAAATTAAAA	800
	TAAATAAATA	AAATAAATAA	AATAAATGGG	CCCTGCGCGG	TGGCTCAAGC	850

CTGTCATCCC CTCACCTTTGG GAGGCCAAGG CCGGTGGATC AAGAGGCGGT 900
CAGACCAACA GGGCCAGTAT GGTGAAACCC CGTCTCTACT CACAATACAC 950
AACATTAGCC GGGCGCTGTG CTGTGCTGTA CTGTCTGTAA TCCCAGCTAC 1000

(2) INFORMATION FOR SEQ ID NO:41

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1000 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (A) LIBRARY:
- (B) CLONE: S097

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41

GGACATGAGG CTTCCCAGCC AACTGCAGGT GCACAACATA AATGTATCTG 50
CAAACAGACT GAGAGTAAAG CTGGGGGCAC AAACCTCAGC ACTGCCAGGA 100
CACACACCCT TCTCGTGGAT TCTGACTTTA TCTGACCCGG CCCACTGTCC 150
AGATCTTGTT GTGGGATTGG GACAAGGGAG GTCATAAAGC CTGTCCCCAG 200
GGCACTCTGT GTGAGCACAC GAGACCTCCC CACCCCCCCA CCGTTAGGTC 250
TCCACACATA GATCTGACCA TTAGGCATTG TGAGGAGGAC TCTAGCGCGG 300
GCTCAGGGAT CACACCAGAG AATCAGGTAC AGAGAGGAAG ACGGGGCTCG 350
AGGAGCTGAT GGATGACACA GAGCAGGGTT CCTGCAGTCC ACAGGTCCAG 400
CTCACCCCTGG TGTAGGTGCC CCATCCCCCT GATCCAGGCA TCCCTGACAC 450
AGCTCCCTCC CGGAGCCTCC TCCCAGGTGA CACATCAGGG TCCCTCACTC 500
AAGCTGTCCA GAGAGGGCAG CACCTTGAGC AGCGCCCACC CCACTTCACT 550
CTTCCTCCCT CACAGGGCTC AGGGCTCAGG GCTCAAGTCT CAGAACAAAT 600
GGCAGAGGCC AGTGAGCCCA GAGATGGTGA CAGGGCAATG ATCCAGGGGC 650
AGCTGCCTGA AACGGGAGCA GGTGAAGCCA CAGATGGGAG AAGATGGTTC 700
AGGAAGAAAA ATCCAGGAAT GGGCAGGAGA GGAGAGGAGG ACACAGGCTC 750
TGTGGGGCTG CAGCCCAGGA TGGGACTAAG TGTGAAGACA TCTCAGCAGG 800
TGAGGCCAGG TCCCATGAAC AGAGAAGCAG CTCCCACCTC CCCTGATGCA 850
CGGACACACA GAGTGTGTGG TGCTGTGCC CCAGAGTCGG GCTCTCCTGT 900
TCTGGTCCCC AGGGAGTGAG AAGTGAGGTT GACTTGTCCC TGCTCCTCTC 950
TGCTACCCCA ACATTCACCT TCTCCTCATG CCCCTCTCTC TCAAATATGA 1000

(2) INFORMATION FOR SEQ ID NO:42

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1144 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (B) CLONE: S103

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42

	CTCTGACTCT	CCGCGGTGGT	TGTTGGGGCT	TCTTGGCTTT	GTTTTGTTGT	50
	TTGTTTGTAT	TTTATTTTTT	TCTCTCTGAC	ACCTATTTTA	GACAAATCTA	100
	AGGGAAAAAG	CCTTGACAAT	AGAACATTGA	TTGCTGTGTC	CAACTCCAGT	150
5	ACCTGGAGCT	TCTCTTTAAC	TCAGGACTCC	AGCCCATTTG	TAGACGTGTG	200
	TTTCTAGAGC	CTGCTGGATC	TCCCAGGGCT	ACTCACTCAA	GTTCAAGGAC	250
	CAACAAGGGC	AGTGGAGGTG	CTGCATTGCC	TGCGGTCAAG	GCCAGCAAGG	300
	TGGAGTGGAT	GCCTCAGAAC	GGACGAGATA	ATGTGAACTA	GCTGGAATTT	350
	TTTATTCTTG	TGAATATGTA	CATAGGCAGC	ACTAGCGACA	TTGCAGTCTG	400
	CTTCTGCACC	TTATCTTAAA	GCACTTACAG	ATAGGCCTTC	TTGTGATCTT	450
10	GCTCTATCTC	ACAGCACACT	CAGCACCCCC	TTCTCTGCCC	ATTCCCCAGC	500
	CTCTCTTCCT	ATCCCATCCC	ATCCCATCCC	ATCCCATCCC	ATCCCATCCC	550
	GCTCTTTTCC	TACTTTTCCT	TCCCTCAAAG	CTTCCATTCC	ACATCCGGAG	600
	GAGAAGAAGG	AAATGAATTT	CTCTACAGAT	GTCCCATTTT	CAGACTGCTT	650
	TAAAAAAAAT	CCTTCTAATC	TGCTATGCTT	GAATGCCACG	CGGTACAAAAG	700
15	GAAAAAGTAT	CATGGAAATA	TTATGCAAAT	TCCCAGATTT	GAAGACAAAA	750
	ATACTCTAAT	TCTAACCAGA	GCAAGCTTTT	TTATTTTTTA	TACAGGGGAA	800
	TATTTTATTC	AAGGTAAAAAT	TCTAAATAAA	ATATAATTGT	TTTTTATCTT	850
	TTCTACAGCA	AATTTATAAT	TTTAAGATTC	CTTTTCTTGT	TTATCAGCAG	900
	TTGTTATTAC	ATCCTTGTGG	CACATTTTTT	TTTAATTTTG	TAAAGGTGAA	1000
20	AAAAGCTTTT	ATGAGCTCAT	CTAGCAATCA	GATTTTCCTG	TGGA	1144

(2) INFORMATION FOR SEQ ID NO:43

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1366 bp
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Double
- (D) TOPOLOGY: Circular

(ii) MOLECULE TYPE: Genomic DNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:

- (B) CLONE: S110

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43

	GGAATTCAAT	GGAATATAAC	GAAATGGATA	GGATCAGAAC	GGAACAGAGC	50
	GGAGTGGAGT	TGAGTGGAGT	GGATCGGAGT	GCAGTGGAAA	GGAATGGAAT	100
	AGAATGGAAT	GGAATGCAGT	GGAGTGGAAAT	GGAATGAAGT	GGAATGGAGT	150
	TGAGTGGAGT	GGATCGGAGT	GCAGTGGAAA	GGAATGGAAG	AGAATGGAAT	200
	GGAATGGAAT	GCAGTGGACT	GGAATGGAAT	GGAGTGGAGT	GGAGTGCAGT	250
	GGGAATCGAG	TGGAGTGGAG	TGGAATGGAC	TGGAATGGAA	TGGATTGGAG	300
	TGGAGTGCAG	TGGAATCGAG	TGGAGTGGAG	TGGAATGGAG	TAGAATGGAA	350
40	TGGAGTGGAG	TGTAGTGGAA	TGGAATGGAA	TGGTGAATGA	ATGTCAGCTA	400
	AGATTGTGCA	ACTGCATTCC	AGTCTGGGTG	ACAAAGTGAG	ATCCAGTCGA	450
	AGTAAAGGAA	TGGAATGGAA	TAGAGTAAAA	TGGAATGGAA	TGGTGTGGAG	500
	TGGAATGGAA	TGGAGAGGAA	TGGAGTGGAG	TGGAGTGGAG	TGGAGTGGAA	550
	TGGAGTGGAG	TGGAATGGAG	AGTGATGGAG	AGGAATGGAA	TGGAATGGAA	600
50	TGGAATGGAG	TGGAATGGAA	TGGAATGGAG	TGGAATGGAA	TGGAATGTAG	650
	AGGAGTGGAG	TGGATTGGAG	TGGAGTGGAA	TGGAGTGGAA	TAGAGTGAAA	700
	TTTAGTGGAG	TGTAATGGAG	TGGAGTGGAG	TGGCAGTTGA	GTGGCATGGA	750
	TCAGGTGCAG	TGGAATGGAA	TGGAATGGAG	TGGAGTGGAG	AGGAGTGGAG	800
	TGGAATCGAA	TGGAATGGCA	TGGAGTGGAG	TGGAATGGAG	TGGATTGGAA	850
55	TTGAATGCAG	TGGAATGGAA	TGCAATGGAG	TGGAGTGGAG	TGCAGTGGAG	900
	TGGAGTGGAG	GGGAATGGAA	TGGAGTGGAG	TAAAATGGTT	TGGAATGGAG	950
	TGGGGTGGAA	TGGAGTGGGT	TGGAATGGAG	TGGAGTGGAG	TAGAACGGAG	1000
	TGATTGGGGT	GGAATGGAAT	AGAGTGGAAAT	GGAATGGAGT	GGAGTGGAGT	1050

AGAACGGAGT GATTGGAGTG GAATGGAATA CAGTAGAGTG GAATGCAGTG 1100
 GAGTGGAAATG GAATGGAGTG GAGTGGCATG GAAAGGAATG GAGAGGAATG 1150
 GAATGGAAATG GAATGGAAATG GAATGGAAATG GAATGGAAATG GAACGGTGAA 1200
 ATAAAATGTG AGTTAAGATT GTGCCACTGC ATTGCAGTCT GGGGGACAGA 1250
 GTGAGATACA GTCGAAATAA AGGAATGGAA GGGACTGGAG TAGAATGGAA 1300
 TGGAAATTGAG TGGAGTGGAA TGGAAATGAAG TGGAGAGGAA TGGAAATGGAG 1350
 TGGAAATGCAA TGGAGG 1366

(2) INFORMATION FOR SEQ ID NO:44

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44

TGGCTCAGAC ACCTCATTG 19

(2) INFORMATION FOR SEQ ID NO:45

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45

CACCACTGTA TTCCCAGTTT G 21

(2) INFORMATION FOR SEQ ID NO:46

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46

CACTTGCCAT CCCTGCCACA CA 22

(2) INFORMATION FOR SEQ ID NO:47

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47

AGCGCACCCC CAATTTCCGG TAT 23

(2) INFORMATION FOR SEQ ID NO:48

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48

TGGGGACATG AACACACTTT GC 22

(2) INFORMATION FOR SEQ ID NO:49

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49

GAGGCCCAGG ACCAGATGAA AT 22

(2) INFORMATION FOR SEQ ID NO:50

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50

CACCTGTCAG GCAAGGCTTA AAC 23

(2) INFORMATION FOR SEQ ID NO:51

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51

CAACACTGAG CGCTTTTAGG GACT 24

(2) INFORMATION FOR SEQ ID NO:52

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52

TCAGGCAAGG CTTAAACAGG GATA 24

(2) INFORMATION FOR SEQ ID NO:53

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53

AACTGAGCG CTTCTAGGGA CTTC 24

(2) INFORMATION FOR SEQ ID NO:54
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54

TGAGCGCTTC TAGGGACTTC TTCA 24

(2) INFORMATION FOR SEQ ID NO:55
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55

CCCTGCCCTA CCCACTTG 18

(2) INFORMATION FOR SEQ ID NO:56
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56

AGGCCCAGGA CCAGATGA 18

(2) INFORMATION FOR SEQ ID NO:57
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57

GCACCTGTCA GGCAAGGCTT AAAC 24

(2) INFORMATION FOR SEQ ID NO:58
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58

CCAGCCATGA AGTGGCTGTG AG 22

(2) INFORMATION FOR SEQ ID NO:59
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22

- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:59

CCCGCTTCAA AGTTCCCACT TC 22

(2) INFORMATION FOR SEQ ID NO:60

- 10 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 21
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:60

CCTCCCATTT CAGCCTCCTG A 21

(2) INFORMATION FOR SEQ ID NO:61

- 20 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 24
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

25 GTCTGCCACA GTGCTGGAAA CTAA 24

(2) INFORMATION FOR SEQ ID NO:62

- 30 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 21
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

35 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62

GCACCCCAGC CTAAGGCAAT A 21

40 (2) INFORMATION FOR SEQ ID NO:63

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 18
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63

GCATGGCGGA AGAAACAA 18

50 (2) INFORMATION FOR SEQ ID NO:64

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 19
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

55 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:64

TGGCAACAGA GCGAGACTC

19

(2) INFORMATION FOR SEQ ID NO:65

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65

CCTGGGTGAC AGCGAGAATC T

21

(2) INFORMATION FOR SEQ ID NO:66

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66

TGTCCCTTGC CTTGTCTCAC TAAA

24

(2) INFORMATION FOR SEQ ID NO:67

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67

CAGCCTTGGT GACAGAGCAA A

21

(2) INFORMATION FOR SEQ ID NO:68

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68

TGTGTTGAGG GTGGGGTACA T

21

(2) INFORMATION FOR SEQ ID NO:69

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69

CCTGGGCAAG AGAGCAAG

18

(2) INFORMATION FOR SEQ ID NO:70

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70

CACATCCCAA AACCACCCTA C

21

(2) INFORMATION FOR SEQ ID NO:71

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71

GCATTTCCCC TGCTTGTACT

20

(2) INFORMATION FOR SEQ ID NO:72

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72

GATCACATTT GCTAACCACT TCTC

24

(2) INFORMATION FOR SEQ ID NO:73

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73

GGCAACATAT CAAGACCCCC ATCTCT

26

(2) INFORMATION FOR SEQ ID NO:74

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74

GAAGCTGCCC CTCACCACTA CATTTT

26

(2) INFORMATION FOR SEQ ID NO:75

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid

- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75

5

GATCACATTT GCTAACCACT TCTC

24

(2) INFORMATION FOR SEQ ID NO:76

10

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76

TATAAATTAC CCAGTCTCAG GAAG

24

(2) INFORMATION FOR SEQ ID NO:77

20

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 20
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77

GTGATACAGC AAGCCTCATC

20

(2) INFORMATION FOR SEQ ID NO:78

30

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78

AGAGACTCCT GGAAAGATAA~AAGT

24

40

(2) INFORMATION FOR SEQ ID NO:79

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 23
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79

50

GTCTGGAGAA CAGTGGCCCT TGT

23

(2) INFORMATION FOR SEQ ID NO:80

55

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80

CAGGAAGCTG AGGCAGGAGA ATCT

24

(2) INFORMATION FOR SEQ ID NO:81

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81

AAGGCTCCAG TGGGGTAT

18

(2) INFORMATION FOR SEQ ID NO:82

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82

AAAACAAGGC AGTAGTCAAT AAAG

24

(2) INFORMATION FOR SEQ ID NO:83

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83

GGCATGAGAA TCGCTTGAAC CTG

23

(2) INFORMATION FOR SEQ ID NO:84

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84

GGCCTCCATG ATGTTTCCAA TGAT

24

(2) INFORMATION FOR SEQ ID NO:85

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85

TCAGGAGGCA TGAGAATCGC TTGA

24

(2) INFORMATION FOR SEQ ID NO:86
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86

GGCCTCCATG ATGTTTCCCA ATGA

(2) INFORMATION FOR SEQ ID NO:87
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87

CTCGCCCTCT CCTATAAGCA GTTT

(2) INFORMATION FOR SEQ ID NO:88
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88

GCAGAGATAA TTTGGAGTGG GATG

(2) INFORMATION FOR SEQ ID NO:89
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89

CTTGGGTGCC TGTAATCC

(2) INFORMATION FOR SEQ ID NO:90
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90

GGTAGAGCTC CCCCATCT

(2) INFORMATION FOR SEQ ID NO:91
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22

- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:91

GCAGAAATATT GGGGCTCATC AC 22

(2) INFORMATION FOR SEQ ID NO:92

- 10 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 24
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

15

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92

AAACAAGGAA AGGAGAGGAG AGGA 24

20 (2) INFORMATION FOR SEQ ID NO:93

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 23
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

25

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93

AAGGTTGTGG GATGACTACT ACA 23

30 (2) INFORMATION FOR SEQ ID NO:94

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 21
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

35

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:94

40 TGGTCAACAC AGCAAGACAT T 21

(2) INFORMATION FOR SEQ ID NO:95

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 22
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

45

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95

50 TCCTGCCACC TGCTTGCTTT CT 22

(2) INFORMATION FOR SEQ ID NO:96

- 55 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 23
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:96

ATTGCACTCC AGCCTGGGTGA TAC

23

(2) INFORMATION FOR SEQ ID NO:97

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:97

CGCTTGAGCC TTGGAGATTG

20

(2) INFORMATION FOR SEQ ID NO:98

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98

GAGCAGTCAG AATTCAGGAG TTGT

24

(2) INFORMATION FOR SEQ ID NO:99

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:99

TGGGCAACAA GAGCAAACT CCAT

24

(2) INFORMATION FOR SEQ ID NO:100

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100

GGGACTTGGG CTGAGGGCTT TAC

23

(2) INFORMATION FOR SEQ ID NO:101

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:101

ATATCAATAT CAGGCAGCCA CAGG

24

- (2) INFORMATION FOR SEQ ID NO:102
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

5

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:102

10

CCGTTTCAGA GCAGAGGTTT AGC

23

- (2) INFORMATION FOR SEQ ID NO:103
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

15

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:103

20

TTCATTGGT TTCAAAGAAC TTA

23

- (2) INFORMATION FOR SEQ ID NO:104
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

25

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:104

30

AGACTCCATC TCAAACAAAA GA

23

- (2) INFORMATION FOR SEQ ID NO:105
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

35

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:105

40

TCATGTGCAT GGAGCCTGGT TCAT

24

- (2) INFORMATION FOR SEQ ID NO:106
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

45

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:106

50

CCCAGCCTTG GCAAGAGTGA GGT

23

55

- (2) INFORMATION FOR SEQ ID NO:107

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:107

GGCGACTGAG CAAGACTC

(2) INFORMATION FOR SEQ ID NO:108

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:108

TTAAGCAAAG TAGCCTCAAA CA

(2) INFORMATION FOR SEQ ID NO:109

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:109

GGGCGACTGA GCAAGACTC

(2) INFORMATION FOR SEQ ID NO:110

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:110

ACTCATTACC TTGCATGCAT GATA

(2) INFORMATION FOR SEQ ID NO:111

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:111

CATTACCTTG CATGCATGAT A

(2) INFORMATION FOR SEQ ID NO:112

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:112

TGGGCAACAG AGTAAGACTC A

(2) INFORMATION FOR SEQ ID NO:113

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:113

GTTCAGTACC GTTCACCTCT TTA

(2) INFORMATION FOR SEQ ID NO:114

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:114

GTAAGACTCA GTCTCCAAAA AAAAAAAAAAG

(2) INFORMATION FOR SEQ ID NO:115

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 38
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:115

AGGAATGGTT TCTCTGTTAG TAAATGGT

(2) INFORMATION FOR SEQ ID NO:116

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:116

CAGCCTGGGC AACAAGAATG AAAC

(2) INFORMATION FOR SEQ ID NO:117

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:117

TGGCCCCTGC AGCGGAGTC 19

(2) INFORMATION FOR SEQ ID NO:118

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:118

GAATTCATTT GCGGAAAGAT T 21

(2) INFORMATION FOR SEQ ID NO:119

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:119

CTAGGGAGGC TGGAGTATTC A 21

(2) INFORMATION FOR SEQ ID NO:120

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:120

AGAGCAAGAC CCCGTCTCAT 20

(2) INFORMATION FOR SEQ ID NO:121

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:121

AGTCCATGGG CCTTTTAACA 20

(2) INFORMATION FOR SEQ ID NO:122

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(ii) MOLECULE TYPE: Oligonucleotide ssDNA

(iii) HYPOTHETICAL: no

(iv) IMMEDIATE SOURCE:
(B) CLONE AMPLIFIED: S125

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:122

GAGAATCACT TGAACCCAGG AAG

(2) INFORMATION FOR SEQ ID NO:123

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:123

AGAACCAGCT GTTAGTTTCG TTGA

(2) INFORMATION FOR SEQ ID NO:124

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:124

GGTTGCAGTG AGCCGAGATA AGAGT

(2) INFORMATION FOR SEQ ID NO:125

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:125

TGTGCCAGGA ACCAGAAATT TACAG

(2) INFORMATION FOR SEQ ID NO:126

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:126

GGCCCAAGGT TACTTTTCAC

(2) INFORMATION FOR SEQ ID NO:127

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:127

GGGCCACTGC ACTCCT

16

(2) INFORMATION FOR SEQ ID NO:128

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:128

CATGGTGAGG CTGAAGTAGG AT

22

(2) INFORMATION FOR SEQ ID NO:129

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:129

GTGGCGTGTC TTTTACTTT CTTTA

25

(2) INFORMATION FOR SEQ ID NO:130

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:130

AGGCAGCCCA GGAACAAT

18

(2) INFORMATION FOR SEQ ID NO:131

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:131

CCAAGATAGC GGCCAAGATA GT

22

(2) INFORMATION FOR SEQ ID NO:132

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:132

GAGGGCAGCT GGGATGTTAC TCTT

24

(2) INFORMATION FOR SEQ ID NO:133
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24
 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:133

TGCCCTGTTT GGAGAACTGT AGGT

(2) INFORMATION FOR SEQ ID NO:134
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 19
 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:134

CTCCCCAGAA ACAGATGTA

(2) INFORMATION FOR SEQ ID NO:135
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 20
 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:135

GTGAGCCGAG ATTGTATCAT

(2) INFORMATION FOR SEQ ID NO:136
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 19
 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:136

TCGGGGACAG GGCTTACTC

(2) INFORMATION FOR SEQ ID NO:137
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24
 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:137

ATCATTGTCG CTGCTACTTT ATCG

(2) INFORMATION FOR SEQ ID NO:138
(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 21

- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

5 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:138

CTACTCTACC CCATTTCATT C 21

(2) INFORMATION FOR SEQ ID NO:139

- 10 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 19
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

15 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:139

GTAGAGTGGAG TGGATGAGA 19

20 (2) INFORMATION FOR SEQ ID NO:140

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 21
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:140

ATCAGGCAAA AACGAACAAA C 21

(2) INFORMATION FOR SEQ ID NO:141

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 17
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:141

40 CGGCATCCCA AAGTGAC 17

(2) INFORMATION FOR SEQ ID NO:142

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 23
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:142

50 CAGAGAGGGCA GCACCTTGGA CAG 23

(2) INFORMATION FOR SEQ ID NO:143

- 55 (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 23
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:143

GGCTTCACCT GCTCCCGTTT CAG 23

- 5 (2) INFORMATION FOR SEQ ID NO:144
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 22
 (B) TYPE: Nucleic Acid
10 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:144

15 TCTGCCCATT CCCCAGCCTC TC 22

- (2) INFORMATION FOR SEQ ID NO:145
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24
 (B) TYPE: Nucleic Acid
20 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:145

25 TACCGCGTGG CATTCAAGCA TAGC 24

- (2) INFORMATION FOR SEQ ID NO:146
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 18
 (B) TYPE: Nucleic Acid
30 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:146

35 TCCAGTCTGG GTGACAAA 18

- (2) INFORMATION FOR SEQ ID NO:147
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 20
40 (B) TYPE: Nucleic Acid
 (C) STRANDEDNESS: Single
 (D) TOPOLOGY: Linear

45 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:147

CAATCCACTC CACTCCTCTA 20